OFFICE OF
RIVER PROTECTION
United States Department of Energy

Agency Update

Hanford Advisory Board

Presented by: **Glyn Trenchard, Assistant Manager Tank Farms**

November 8, 2017

Mission

To safeguard the nuclear waste stored in Hanford's 177 underground tanks, and to manage the waste safely and responsibly until it can be treated in the Waste Treatment and Immobilization Plant for final disposition.

Vision

To be a high-performing, innovative organization that is safety-conscious and employee-focused, and committed to achieving our mission with environmental and fiscal responsibility.

Our Team

Office of River Protection (ORP)

ORP is responsible for planning, integrating, and managing the River Protection Program executed by contractors performing work under ORP management. ORP has ~225 employees, both federal and contractor.

Washington River Protection Solutions (WRPS)

WRPS is the prime contractor responsible for safely managing and operating the Tank Farms. WRPS has 2,134 employees*.

Bechtel National, Inc. (BNI)

BNI is responsible for the engineering, construction, startup and commissioning of the Waste Treatment and Immobilization Plant. BNI has 2,913 employees*.

Wastren Advantage, Inc. (WAI)

WAI is the prime contractor responsible for managing the 222-S Laboratory. WAI has 54 employees.*

*As of March 31, 2017

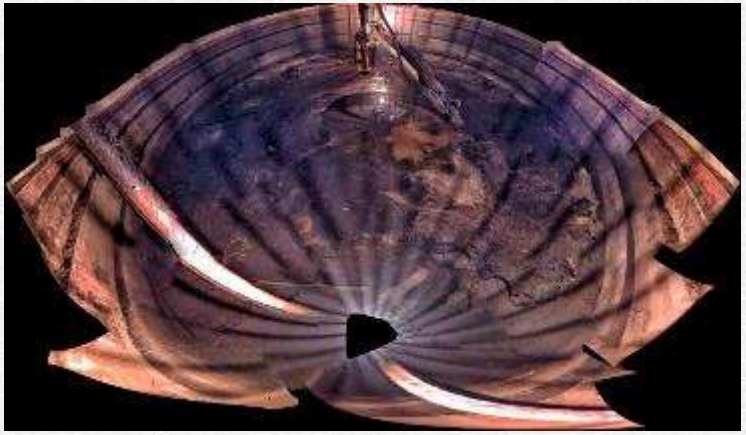

HANFORD REACH
WASHINGTON
HANFORD
CENTRAL PLATEAU
Tank Farms
Waste Treatment Plant
200 West Area
200 East Area
HANFORD REACH
300 Area

River Protection Project

Tank Farms Update

Tank C-105 Update

- First phase of retrieval using MARS Vacuum System removed 92,000 gallons of waste (about 75% of original waste volume) between June 2014 – September 2015
- Latest phase of retrieval began in August 2017
- About 4,500 gallons of waste material remaining
- The waste is a difficult-to-retrieve physical/chemical waste form
- Retrieval strategy includes sluicing, hot water soak and caustic dissolution



In-tank view of C-105 before latest phase of retrieval

Installation of Extended-Reach Sluicing System

C-105 update (continued)

- Robust vapors control strategy is being used during retrieval operations:
  - Includes ventilation stack monitoring, IH monitoring and sampling in breathing zones, strategically placed air monitoring instruments and mobile laboratory
- Project team is using an enhanced leak detection system that measures soil resistance changes
- Results are reviewed daily

A-AX Farm update

- Removed six pieces of long-length equipment at tanks AX-102 and AX-104 – the first tanks set for retrieval in the farm
- Completed installation of equipment into air and water service building, including three water skids
- Continued fabrication of two exhausters to be installed in A Farm

AX-102 thermocouple removal

Building A285 – water skids

242-A Evaporator

- Two evaporator campaigns were completed in Fiscal Year 2017:
  - First campaign was completed in July, creating about 210,000 gallons of double-shell tank storage space
  - Second campaign was completed in August, creating another 315,000 gallons of available space
- Since beginning operations in 1977, the evaporator has removed 84 million gallons of liquid from tank waste

Workers extended the ventilation stack at the 242-A Evaporator this summer from a height of 63 feet to 111 feet to help control chemical vapors during operating campaigns.

Liquid Effluent Retention Facility

- New cover recently installed for one of LERF's three large storage basins – each holds 8 million gallons of wastewater
- LERF stores wastewater sent to the nearby Effluent Treatment Facility
- The wastewater is generated by evaporator campaigns, groundwater projects, solid waste disposal facilities and other cleanup activities
- ETF treated ~4 million gallons of wastewater in FY2017

Prefabricated panels of the polyethylene synthetic rubber cover material were rolled out and bonded together inside the massive basin. The new cover material is noted for its resistance to chemicals, temperature extremes and ultraviolet light. The new cover measures 290 by 310 feet and replaces the old cover that was more than 20 years old.

Double-Shell Tank AY-102

- Retrieval operations completed February 2017
- Multiple visual inspections performed between April and October 2017
- Visual examination has identified at least seven through-liner failure points on the tank floor
- Inspection data indicate pitting corrosion as a contributing factor
- Inspection results will aid in a decision to repair or close the tank

AY-102 Recovery Project Recognition

2017 PMI Project of the Year Award Winner

The AY-102 Recovery Project was named the international Project of the Year by the Project Management Institute at its Oct. 28 Global Conference. From left, Caterina La Tona, vice chair of the PMI Board of Directors, Sebastien Guillot, WRPS AY-102 Recovery Project manager, Doug Greenwell, WRPS Retrieval manager, and Mark Dickson, chairman of the PMI board.

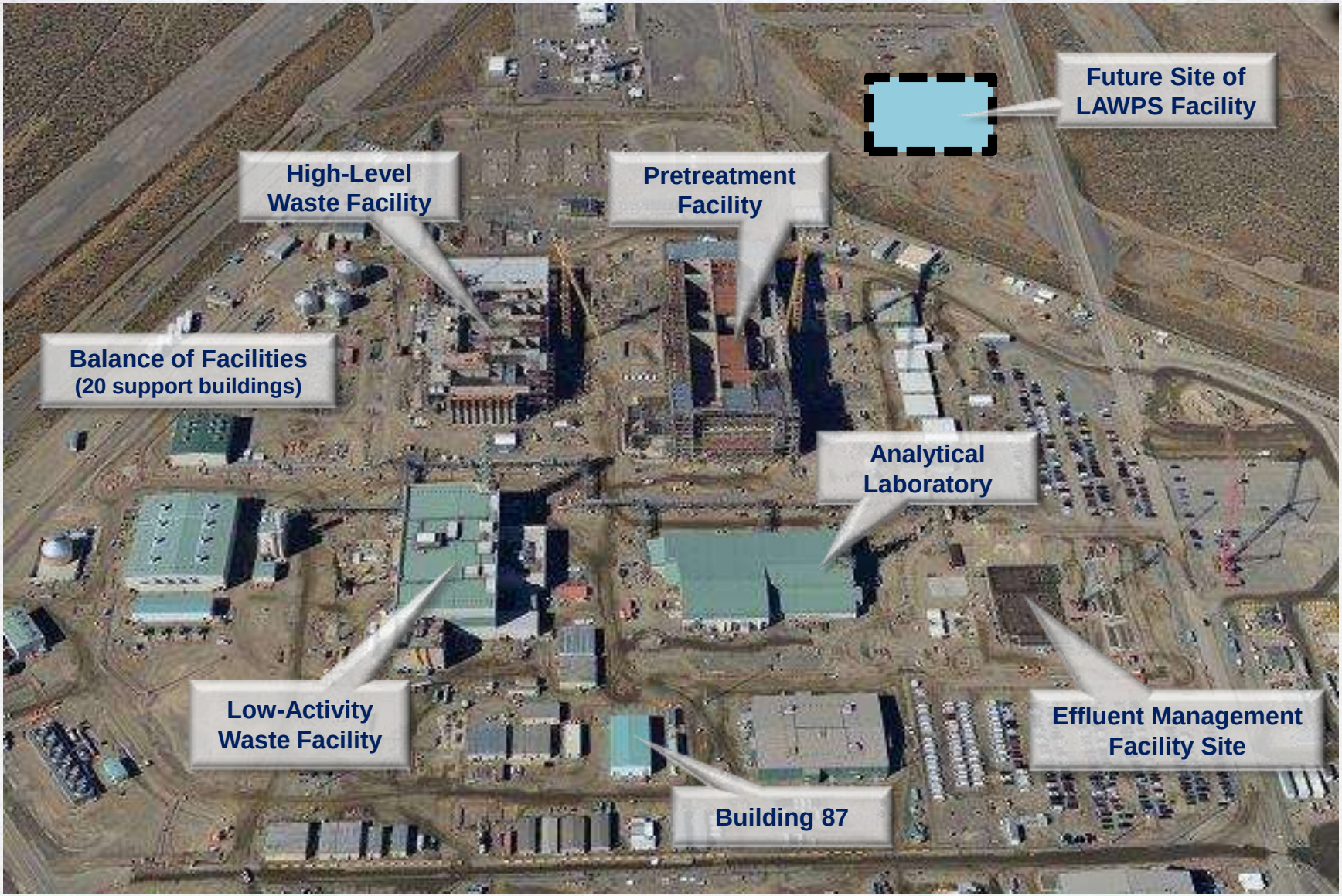
Heat Stress Monitoring Data

- **1,906 times tank farm workers were monitored with physiological monitoring in FY 2017**
  - 1,425 times employees were monitored using the Nonin heart rate monitor.
  - 284 times employees were monitored using the Polar H7 heart rate monitor.
  - 197 times employees were monitored using the Braun Thermoscan (body core temp).
- **3 employees were removed from work**
- **0 employees developed a heat-related disorder**

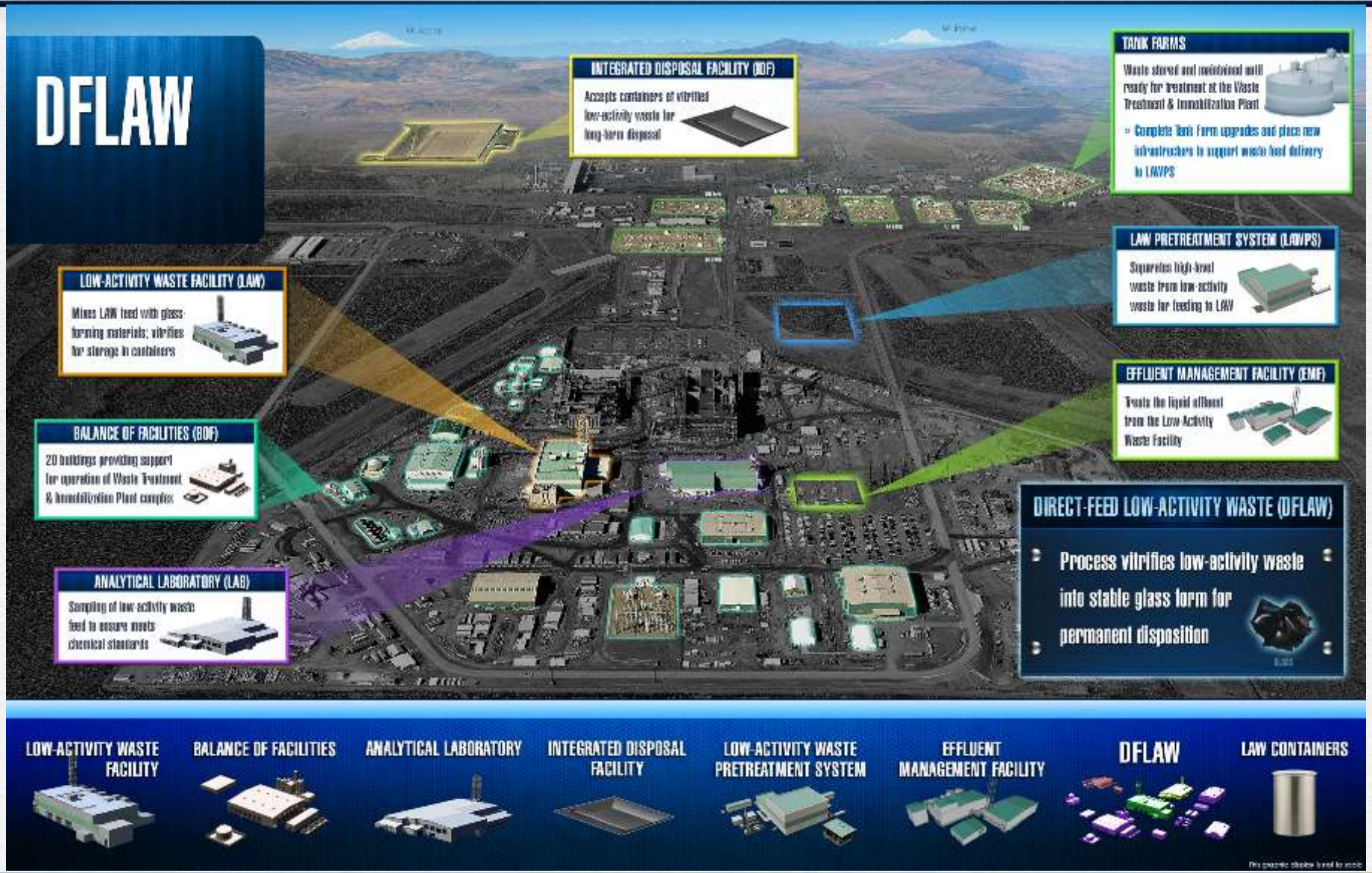
Tank farm work often requires multiple layers of protective clothing and respiratory equipment, including SCBA.

Waste Treatment & Immobilization Plant

Waste Treatment and Immobilization Plant

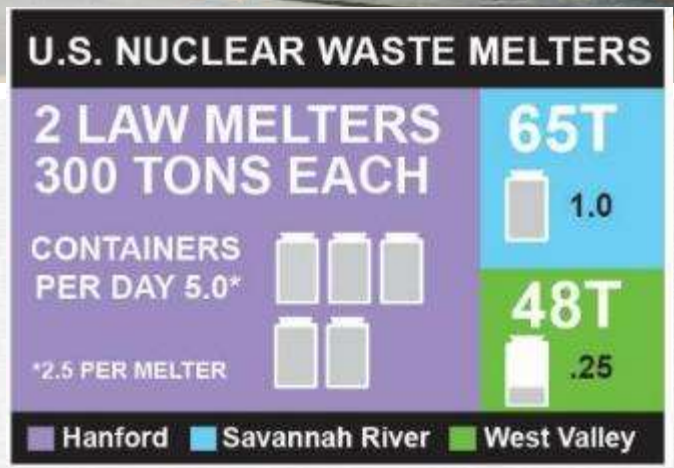


Direct-Feed Low-Activity Waste Facility Overview



Low-Activity Waste Facility Melters Installed

Both 300-ton melters have been assembled in the LAW Facility. The melters are the largest of their kind ever built in the United States. LAW facility construction is expected to be completed next June.

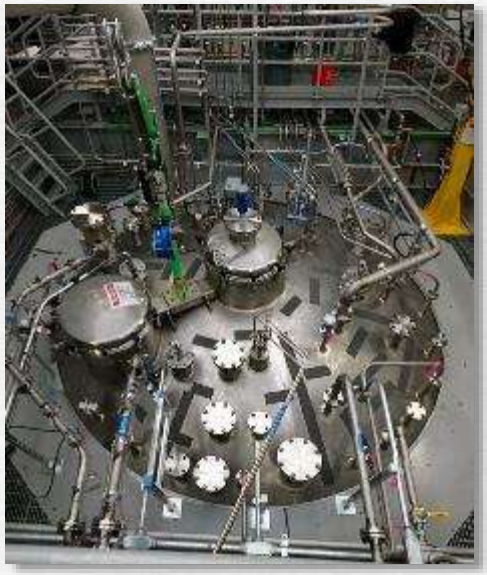


High-Level Waste Facility

- Preliminary Documented Safety Analysis (PDSA) approved September 2017
- DOE considering options for facility

Pretreatment Facility Technical Challenges

- Three of 8 technical decisions resolved in early 2017
- Final testing of full-scale Pulse Jet Mixing vessels and control systems (4th technical decision) was completed in September
- Testing results will be used to inform the final design of the vessels intended for use in the Pretreatment Facility.
- Remaining technical issues anticipated to be resolved in 2018



Other topics selected for Hanford Advisory Board

System Plan, Rev. 8

- System Plan 8 was delivered to Ecology on Oct. 31, 2017 per TPA Milestone M-062-40 (required every 3 years).
- The scenarios analyzed in System Plan 8 include a baseline case that reflects a theoretically achievable approach for completing the RPP mission based on conditions, constraints, assumptions and policy direction in place at the time the scenarios were defined, as well as 10 other scenarios jointly selected by DOE and Ecology.
- A joint working group from ORP, Ecology and WRPS coordinated the Plan's scenarios, assumptions, and modeling approach.
- The modeling results of the System Plan 8 baseline case forecast a significant increase in mission duration and cost over previous System Plans.
- DOE is working to identify opportunities in the near-term that could significantly reduce cost and schedule.
- A more detailed briefing will be scheduled for HAB soon.

Secretary Perry, Deputy Secretary Visit WTP

DOE Secretary Rick Perry, *above and top right*, and Deputy Secretary Dan Brouillette, *right*, toured WTP and other Hanford facilities during separate visits to the site in August.

Kevin Smith Retires

Meet New ORP Manager Brian Vance

- Began work at ORP on November 6
- Most recently was project director at CHPRC focused on cleanup of 324 Building
- Previous work includes project management roles at Areva and Westinghouse
- More than 30 years of leadership experience on nuclear-related projects
- Submarine officer with U.S. Navy from 1984-2009, retiring as captain

"Protecting our workers, the public, and the environment"